



Altitude Combustion Stand Facility at NASA Glenn Research Center

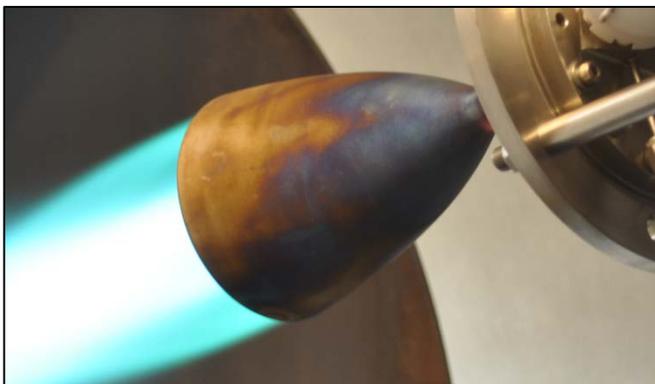
The **Altitude Combustion Stand (ACS)** facility provides a system to test combustion components at a simulated altitude. The facility is equipped with an axial thrust stand, gaseous and cryogenic liquid propellant feed systems, water-cooled diffuser, data acquisition system, facility control system, spray cooler and multi-stage vacuum ejector system. Construction of this facility was complete in 2008 and testing began in 2009. Propellant capabilities include gaseous hydrogen, gaseous oxygen, liquid hydrogen, liquid oxygen, and liquid methane. The system can accommodate engines up to 2000 pounds thrust and combustion chamber pressure to 1000 psia. Depending on the size engines can be fired at sea level or into a test tank that is evacuated to simulated altitude up to 100,000 feet.

Facility Benefits

- Thrust Measurements
- Cryogenic propellants
- Efficient multi-train vacuum ejectors
- Dedicated nitrogen gas system
- 400 Channel DAC system
- Water cooling
- On-site fabrication and machine shop
- Reconfigurable, flexible systems
- In-house design, research staff available

Commercial Applications

- Igniter concepts
- Chamber/Nozzle configurations
- Ejector designs
- Integrated engine systems
- Performance studies
- Pulse and steady state firing



ACS Propellant Summary

Propellant	Volume	Pressure (psi)	Flow Rate (lbm/sec)	Inlet Conditioning (R)
LH2	200 gal	1,800	1.5	N/A
GH2	140,000 scf	2,400	3	N/A
LO2 (unconditioned)	200 gal	1,800	7	N/A
LO2 (conditioned)	60 gal	525	0.5	145 to 243 (+/- 5 deg)
GO2	60,000 scf	2,400	7	N/A
LCH4 (conditioned)	60 gal	525	0.16	170 to 304 (+/- 5 deg)
RP-1	100 gal	1,800	2.65	N/A

Contact

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Facility Testing Information

<http://facilities.grc.nasa.gov>

